Hogan Lovells US LLP
Columbia Square
555 Thirteenth Street, NW
Washington, DC 20004
T +1 202 637 5600
F +1 202 637 5910
www.hoganlovells.com

July 24, 2019

Via ECFS
Marlene H. Dortch
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: Notice of Ex Parte Presentation
Amendment of Part 97 of the Commission's Amateur Radio Service Rules to Permit Greater Flexibility in Data Communications, WT Docket No. 16-239; *Petition for Rulemaking filed by Amateur Radio Station Licensee Ron Kolarik (K0IDT)*, RM-11831; *Petition for Rulemaking filed by the American Radio Relay League, Inc. (ARRL)*, RM-11828 (Feb. 28, 2018); *Petition for Rulemaking filed by the American Radio Relay League, Inc. (ARRL)*, RM-11759 (Jan. 8, 2016); *Petition for Rulemaking filed by the American Radio Relay League, Inc. (ARRL)*, RM-11708 (Nov. 15, 2013).

Dear Ms. Dortch:

We submit this *ex parte* letter on behalf of New York University ("NYU") to urge the Federal Communications Commission ("FCC" or "Commission") to ensure that amateur radio operations in the United States remain open and transparent to all participants in the hobby[1] so that: (1) the self-regulatory framework that has long characterized amateur radio throughout its proud history can continue to be effective in the face of advances in radio communications technology, and (2) new adherents to the hobby will be encouraged to join and use their participation to further innovation in radio communications and engineering.[2]

As a major center of radio engineering research and scholarship and on whose faculty sat telegraph and Morse code pioneer Samuel Morse, NYU is committed to fostering innovation in, and attracting new entrants to, the fields of Science, Technology, Engineering, and Math ("STEM"). We can think of no better way for the FCC to promote these goals than to stand up for transparency and openness in amateur radio.

[1] *See* 47 C.F.R. § 97.1(a) (stating that the amateur rules' purpose is to recognize the Amateur Radio Service "as a voluntary *noncommercial* communication service") (emphasis added).

[2] We reluctantly file this *ex parte* letter in response to the breakdown of negotiations toward a compromise on several unresolved issues with members of the board of the Amateur Radio Safety Foundation, Inc. ("ARSFI"). We understand the other side in these negotiations (a small but vocal group intent on offering a global e-mail system whose operation and messages are closed to monitoring by amateur operators in general) was unwilling to compromise on making Winlink communications decodable over-the-air.

The Commission's regulatory framework for the Amateur Radio Service reflects a longstanding policy of rigorous self-policing by the amateur radio community to ensure that the Commission's rules are followed. Openness and transparency are the bedrock principles that facilitate successful self-regulation, allowing amateur operators to decode messages "over-the-air" in real time and thus ensure compliance with the Commission's rules without requiring extensive or time-consuming Commission oversight. A cornerstone of this self-regulatory enforcement regime is Section 97.113(a)(4) of the Commission's rules. This rule prohibits obscuring the meaning of transmitted messages (*e.g.*, effective encryption that would allow amateur operators to evade compliance monitoring by other amateur radio operators).

Unfortunately, by relying on advanced communications modes that effectively encrypt communications traveling through its network, the Winlink system violates Section 97.113(a)(4), thus facilitating the violation of *other* important amateur service rules. Amateur operators and members of the general public are unable to decode Winlink messages over-the-air for true meaning and, in many cases, are unable to determine where the rule violations are occurring, rendering real-time self-policing and rules enforcement impossible. Meanwhile, Winlink's feeble and self-serving excuse for an enforcement mechanism has failed to deter these rule violations or give the amateur community the confidence that rules enforcement is even a Winlink goal. Winlink's current enforcement efforts lack transparency or integrity given their reliance on a: (1) web-based "viewer" that sits behind a login screen and utilizes multiple databases, and (2) back-end network that collects from the general public global messages meant for transmission over the amateur radio spectrum but hides the content of such messages from the amateur radio community. These elements foster an expectation of privacy among Winlink users, which contravenes the longstanding, bedrock principles of openness and transparency that have long characterized the amateur bands.

The Commission, however, has an opportunity to reverse this sad state of affairs. To do so, the Commission should: (1) adopt a Notice of Proposed Rulemaking based on the proposed rule revisions offered in the Petition for Rulemaking filed in RM-11831 ("Kolarik Petition for Rulemaking"); and (2) reject the proposed rules put forward in its 2016 Notice of Proposed Rulemaking in WT Docket No. 16-239 ("*2016 NPRM*"), or any modification thereto.[3] Both of these actions would align the Commission's amateur radio rules with bedrock principles of openness and transparency, ensuring that amateur operators can effectively self-police the amateur bands and the hobby remains a healthy option for those interested in advancing the state of the art in radio communications and engineering.

I. THE WINLINK SYSTEM'S USE OF ADVANCED COMMUNICATIONS MODES (*E.G.*, PACTOR 2, PACTOR 3, PACTOR 4, WINMOR, ARDOP, AND VARA) DOES NOT COMPLY WITH CRITICAL AMATEUR SERVICE RULES.

Amateur radio users agree that the Commission's rules have long been tailored to further the FCC's policy of openness and transparency in the Amateur Radio Service.[4] Section 97.113(a)(4) generally

[3] *See Amendment of Part 97 of the Commission's Amateur Radio Service Rules to Permit Greater Flexibility in Data Communications*, Notice of Proposed Rulemaking, 31 FCC Rcd 8485 (2016) ("*2016 NPRM*"). The *2016 NPRM* would eliminate the baud rate limit applicable to data emissions in certain amateur radio bands without implementing a corresponding bandwidth limitation or addressing the ongoing effective encryption issue.

[4] *See* Comments of ARRL, the National Association for Amateur Radio, RM-11699, at 6 (July 8, 2013) ("ARRL 2013 Comments") ("It is longstanding Commission and court jurisprudence that there is no expectation of privacy with respect to the content of Amateur Radio communications."); Letter from Theodore S. Rappaport, N9NB, to the Federal Communications Commission, WT Docket No. 16-239, PS Docket No. 17-344, RM-11708, RM-11759, RM-11828, at 2 (Mar. 20, 2019) ("[T]he fundamental principle

prohibits amateur radio operators from transmitting "encoded" messages.[5] This general prohibition enables amateurs to receive messages transmitted by other amateurs over-the-air, which is critical for effective self-policing. The Winlink system fails to comply with the general prohibition in Section 97.113(a)(4), and its failure to comply enables numerous other rule violations. Therefore, in order to enforce the terms of Section 97.113(a)(4), the Commission must enable over-the-air reception of Winlink messages for meaning, regardless of the communications mode used (*e.g.*, PACTOR 2, PACTOR 3, PACTOR 4, WINMOR, ARDOP, or VARA).

A. Section 97.113(a)(4) prohibits the transmission of encrypted or encoded messages, including those messages which are effectively encrypted or encoded and cannot be readily decoded for meaning.

Section 97.113(a)(4) prohibits the transmission of "messages encoded for the purpose of obscuring their meaning, except as otherwise provided [in the rules]."[6] Importantly, the Commission has described Section 97.113(a)(4) as a "prohibition on encryption."[7] Over time, the Commission has implemented and revised Section 97.113(a)(4) so that "the amateur service rules . . . conform to the language of the international *Radio Regulations*."[8] The international Radio Regulations "prohibit[] amateur stations from transmitting messages in codes or ciphers intended to obscure the meaning thereof."[9] Therefore, decades-long requirements have stressed the need for open communications in the amateur bands.

In comments to the Commission, the ARRL has recognized and lauded this prohibition on encryption.[10] ARRL has also acknowledged that Section 97.113(a)(4) is intended to maintain "[t]he public nature of Amateur Radio communications," which ARRL has described as: (1) "an inherent characteristic of the Service," and (2) "a component of the self-regulatory history of Amateur Radio."[11] According to ARRL, in order to maintain this self-regulating history, amateur operators must possess "[t]he ability to monitor *ongoing* Amateur communications[] to determine . . . whether the *ongoing* communications are between or among licensed radio amateurs."[12]

Unfortunately, the Winlink system violates Section 97.113(a)(4)'s prohibition on encryption by predominantly relying on advanced communications modes – such as PACTOR 2, PACTOR 3,

---

of the amateur radio service has been to ensure there is a way for the public to engage and . . . to provide . . . *open access to the hobby*.") (emphasis added).

[5] *See* 47 C.F.R. § 97.113(a)(4) ("No amateur station shall transmit . . . messages encoded for the purpose of obscuring their meaning, except as otherwise provided herein.").

[6] *Id.*

[7] *Don Rolph Petition for Rulemaking to Amend Part 97 of the Commission's Rules Governing the Amateur Radio Service to Provide for Encrypted Communications*, Order, 28 FCC Rcd 13366, ¶ 4 (WTB 2013) ("*2013 Order*").

[8] *Id.* n.3; *see also Amendment of Part 97 of the Commission's Rules to Implement Certain World Radio Conference 2003 Final Acts*, Order, 21 FCC Rcd 278 (WTB 2006) (revising Section 97.113(a)(4) "to conform to the current language of Radio Regulations Article 25.2A").

[9] *Amendment of the Amateur Service Rules to Clarify Use of CLOVER, G-TOR, and PacTOR Digital Codes*, Order, 10 FCC Rcd 11044, n.6 (WTB 1995) ("*PACTOR 1 Order*").

[10] *See* ARRL 2013 Comments at 2 (discussing "the inability of Amateur Radio operators to encrypt the content of their transmissions in order to obscure the meaning of the transmissions").

[11] *Id.* at 8.

[12] *Id.* (emphasis added).

PACTOR 4, WINMOR, ARDOP, and VARA – that compress and, by extension, effectively encrypt messages or make them impossible to decode for meaning.[13] Unlike PACTOR 1, the "technical characteristics" of these other communications modes relied upon by Winlink have *not* been "documented publicly" in such a way that facilitates over-the-air interception for true meaning by other amateur radio operators.[14] The Commission explicitly authorized PACTOR 1 on account of the fact that its "technical characteristics" had been published.[15] This history underscores why other, more advanced and unpublished communications modes currently used by the Winlink system are prohibited under Section 97.113(a)(4).

Winlink users are aware that use of automatic request ("ARQ") with compression effectively encrypts their messages when intercepted by others over-the-air. ARRL even advertises that Winlink's use of more advanced communications modes improves the privacy of communications sent over its system,[16] despite having acknowledged that Section 97.113(a)(4)'s prohibition on encryption is intended to maintain "[t]he *public* nature of Amateur Radio communications."[17] Winlink itself states that certain service codes for Radio Mail Server ("RMS") stations (or "gateways") "are used by groups who wish to keep gateway information private" and that "[t]he Winlink Team does not distribute that information."[18] This reliance on ARQ with compression (and its effective encryption) creates a private e-mail network over the amateur bands, with no ability for other amateur operators to decode messages over-the-air. Winlink is unique among all data transmission systems in the Amateur Radio Service in that it: (1) relies on advanced communications modes that effectively encrypt communications, which renders over-the-air decoding impossible when an amateur operator experiences a single bit error; (2) does not allow operators of RMS stations to monitor e-mails passing through their RMS stations until *after* the messages have been transmitted, which prevents RMS operators from determining whether an e-mail communication complies with the amateur rules before such communication is transmitted; and (3) fails to offer over-the-air decoding methods for other amateur operators to intercept such messages and self-police the band.

An interpretation of Section 97.113(a)(4) that limits the rule's applicability solely to those who develop a particular communications mode for no other purpose than to encode or encrypt (and absolves parties that use advanced communications modes that they know will effectively encrypt) would ignore amateur users' bedrock right to effective self-policing and the Commission's long-standing policy in favor of openness and transparency. If violations of Section 97.113(a)(4) could only occur where the sole intent of a communications mode was to obscure the meaning of communications (even where the user understood that use of the mode would result in encryption),

---

[13] *See* Reply Comments of Ron Kolarik, RM-11831, at 1 (July 17, 2019) (discussing numerous flaws with attempted demonstration that sought to prove amateur users' ability to intercept Winlink messages over-the-air); *see also* Reply Comments of Professor Theodore (Ted) S. Rappaport, RM-11831, at 6 (Apr. 29, 2019) (Winlink's combined use of fading channels and "differential encoding or compression . . . [creates] secure, effectively encrypted communications.").

[14] *PACTOR 1 Order* ¶ 3. In 1995, the Commission authorized use of PACTOR 1 by inserting a reference to PACTOR 1 in Section 97.309(a)(4) of its rules. Therefore, unlike the other communications modes used by the Winlink system, PACTOR 1 is not subject to the general prohibition in Section 97.113(a)(4) because the rules otherwise provide for its use. *See* 47 C.F.R. § 97.113(a)(4) (prohibiting encoded messages unless "otherwise provided").

[15] *See PACTOR 1 Order* ¶ 3.

[16] ARRL, *Winlink 2000 Radio-E-mail System Overview*, http://www.arrl-mdc.net/Winlink/MDCWL2KOVwAM.htm (July 15, 2019) ("WL2K system radio-e-mail is also compressed to reduce spectrum and *to enhance privacy*.") (emphasis added).

[17] ARRL 2013 Comments at 8.

[18] Winlink, *Tools*, "RMS Map," https://winlink.org/RMSChannels (July 15, 2019).

such a reading would permit amateur operators to compress messages (knowing that the message content would be obscured to all but their recipients) and effectively encrypt all communications by claiming that their goal was merely to transmit messages more efficiently.[19] Given its decades-long policy of self-regulation in the Amateur Radio Service and its policy of ensuring the use of the service for "operation of, or . . . communications between, amateur stations,"[20] the FCC could not reasonably have intended to permit the effective encryption of messages as a byproduct of introducing new, more spectrally efficient communications modes that rely on ARQ with compression.[21]

B. The Winlink system's violation of Section 97.113(a)(4) enables other FCC rule violations.

By relying on ARQ or compression techniques that effectively encrypt messages in violation of Section 97.113(a)(4), the Winlink system enables the violation of other amateur service rules, including:

- *47 C.F.R. § 97.113(a)(3)*, which prohibits "[c]ommunications in which the station licensee or control operator has a pecuniary interest, including communications on behalf of an employer." Winlink's current enforcement mechanism reveals that e-mails traveling through Winlink's system violate Section 97.113(a)(3).[22] For example, in March 2019, an insurance agent and Winlink user sent multiple e-mails that traveled through a U.S.-based Winlink gateway and discussed the pricing and terms of an insurance policy. In April 2019, an amateur radio operator sent an e-mail through a U.S.-based Winlink gateway to a marina regarding the price for long-term storage of a sailboat.

- *47 C.F.R. § 97.113(a)(5)*, which prohibits "[c]ommunications, [made] on a regular basis, which could reasonably be furnished alternatively through other radio services." Winlink transmits regular e-mail communications, including commercial e-mail communications,[23] over the amateur frequencies. There are many other FCC-regulated radio services available for regularly sending these data communications.[24] The rules governing the other radio

---

[19] *See* Comments of Robert W. Rennard, RM-11831, at 1 (June 18, 2019) ("[I]f jurors recruited from the public at large were empaneled to listen to . . . both sides of this argument, after brief discussion, the jury would decide that, "If it quacks like a duck, it probably is a duck." The communications might not be encrypted from the viewpoint of a purist, but the consequence of the employed encoding and/or compression is that it might as well be encrypted.").

[20] *Amendment of Part 97 of the Commission's Rules Governing the Amateur Radio Services, et al.*, Notice of Proposed Rulemaking and Order, 19 FCC Rcd 7293, ¶ 41 (2004) ("*2004 NPRM and Order*").

[21] Indeed, in Section 97.1 of the Commission's rules, the stated purpose of the Amateur Radio Service is to facilitate experimentation and development of technical experts and international goodwill. Tolerating effectively encrypted communications modes and a closed e-mail network that is hidden, controlled, and operated by a tiny development team such as ARSFI cannot possibly advance the Commission's stated goals for the Amateur Radio Service.

[22] *See, e.g.*, Reply Comments of Janis Carson, Ron Kolarik, Lee McVey, and Dan White, WT Docket No. 16-239, RM-11708, RM-11759, and RM-11831, at 29-60 (July 18, 2019) (providing extensive evidence in FCC Enforcement Bureau Ticket No. 3184322 that recent e-mails traveling through the Winlink system violate amateur service rules) ("Carson, Kolarik, McVey, and White Reply Comments").

[23] *See supra* Section I.B (discussing violations of 47 C.F.R. § 97.113(a)(3)); *see also* Carson, Kolarik, McVey, and White Reply Comments at 29-60 (providing evidence of commercial e-mail communications traveling through the Winlink system).

[24] *See, e.g.*, Iridium, Iridium GO!, https://www.iridium.com/products/iridium-go/ (July 15, 2019) (offering satellite-based text, call, e-mail, and web browsing); Globalstar, Sat-Fi2 Satellite Wi-Fi Hotspot,

services do not require the same level of openness and transparency as the rules governing the use of amateur frequencies. The Commission is clear that the Amateur Radio Service is not like other radio services. In dealing with petitions seeking to broadcast music or bulletins over the amateur bands, the Commission has reinforced the need for the Amateur Radio Service to serve strictly as a hobby, without providing access to or services via the amateur radio spectrum by or for the public.[25] The Commission has also expressed its "strong commitment to maintaining the unclouded distinction between the amateur service and other radio services."[26] Faced with incontrovertible evidence that Winlink is rendering indistinct the barrier between the Amateur Radio Service and other radio services, the Commission should now reaffirm its commitment to this principle. A complaint filed recently with the FCC's Enforcement Bureau demonstrates that gross violations of regular usage and business usage over the amateur bands have been occurring via the Winlink system for well over a decade, and continue to occur regularly, even after the establishment of a viewer.[27]

- *47 C.F.R. § 97.115(a)(2)*, which restricts third party communications to stations in only certain, specified jurisdictions. The Commission lists countries with which U.S. amateur stations may transmit messages for a third party.[28] Winlink's current excuse for an enforcement mechanism reveals that e-mails have traveled through the Winlink system that violate the third party restrictions. For example, in May 2019, a Norwegian amateur radio operator on a sailboat sent an e-mail to another sailboat through a U.S.-based Winlink gateway, despite there being no third party agreement between the United States and Norway.

- *47 C.F.R. § 97.115(b)(1)*, which requires that, with regard to third party communications, the "control operator [be] present at the control point and is continuously monitoring and supervising the third party's participation." Many of Winlink's control operators are not "continuously monitoring and supervising" to determine whether third party participation complies with the amateur service rules. Instead, these control operators are relying on automatically controlled digital stations ("ACDS"), which send e-mail messages over the amateur bands that may violate the Commission's rules.

- *47 C.F.R. § 97.105(a)*, which requires that control operators ensure "the immediate proper operation of the station, regardless of the type of control." Failure to comply with Section 97.115(b)(1) also leads to violations of this more general provision.

- *47 C.F.R. § 97.101(b)*, which prohibits the exclusive use of a frequency. The use of an ACDS to operate part of the Winlink system can cause the commandeering of certain amateur frequencies, effectively shutting out other amateur users and making exclusive use of the frequency.

---

https://www.globalstar.com/en-us/products/voice-and-data/sat-fi2 (July 15, 2019) (offering "e-mail, text, talk, . . . [and] access to the web"); and OCENS, Inc., OCENSMail, https://www.ocens.com/e-mail.aspx (July 15, 2019) ("Complete e-mail solution for satellite and other low bandwidth connections").

[25] *2004 NPRM and Order* ¶ 39 ("The Commission adopted this prohibition to ensure that amateur service frequencies were not used as a substitute for other communication services.").

[26] *2013 Order* ¶ 6.

[27] *See* Carson, Kolarik, McVey, and White Reply Comments (citing FCC Enforcement Bureau Ticket No. 3184322).

[28] *See* Federal Communications Commission, Wireless Bureau, Mobility Division, Amateur Radio Service, *International Arrangements*, https://www.fcc.gov/wireless/bureau-divisions/mobility-division/amateur-radio-service/international-arrangements (July 15, 2019).

C. Winlink's current excuse for an enforcement mechanism has proven ineffective in preventing violations of the Commission's rules, and an effective self-policing regime that ensures that amateur frequencies are used solely for non-commercial purposes requires the ability to decode over-the-air transmissions.

As noted above, most of the communications that travel through the Winlink system rely on ARQ or sophisticated compression techniques that effectively encrypt the communications. By severely limiting amateur users' ability to intercept and decode Winlink messages over-the-air for meaning, the Winlink system prevents successful self-regulation and self-policing of the amateur bands.[29]

The Winlink system's current excuse for an enforcement mechanism, which relies on use of the Winlink viewer, has proven ineffective in curbing violations of the Commission's amateur service rules. The viewer allows volunteers to monitor messages transmitted through the Winlink system. However, as explained below, its continued use raises a host of transparency, integrity, and expectation of privacy concerns that undermine adequate self-policing:

- *Transparency.* Messages sent over the Winlink system are flagged by content filters, reviewed internally by system administrators, and are unavailable to the wider public for review. The viewer page is password-protected and viewable only to registered Winlink users with an FCC call sign.[30] In combination with the Winlink system's use of compression – which effectively encrypts the messages and renders over-the-air interception (and effective self-enforcement) impossible – a password-protected viewer restricts the number of amateur operators who can police the amateur bands, limiting transparency with regards to the enforcement process more generally.

- *Integrity.* Due to the Winlink system's lack of transparency, its current enforcement process also lacks integrity. The Winlink system's databases currently do not store all Winlink communications. Considering the Winlink system's violation of multiple FCC rules,[31] its small circle of administrators and volunteers cannot be trusted to ensure that all messages sent over the Winlink system comply with the Commission's rules.

- *Expectation of Privacy.* By effectively encrypting communications and rendering over-the-air interception impossible, current Winlink operations contribute to Winlink users' expectation that their communications are (or should be) private. ARRL itself has stated that the Winlink system relies on compression "to reduce spectrum use *and to enhance privacy*."[32] This directly contradicts "longstanding Commission and court jurisprudence that there is no expectation of privacy with respect to the content of [a]mateur [r]adio communications."[33] To

---

[29] *See 2013 Order* n. 19 ("We note that a hallmark of enforcement in the amateur service is 'self-policing,' which depends on an amateur station hearing a message being able to determine whether message[s] violate the amateur service rules.") (citing *Waiver of Sections 97.80(b) and 97.114(b)(4) of the Amateur Rules to Permit the Retransmission of Third-Party Traffic in Certain Situations*, Order, 59 Rad. Reg. (P&F) 1326, ¶ 2 (PRB 1986)).

[30] *See* American Redoubt Radio Operators Network (AmRRon), *AmRRon Temporarily Suspends the Use of Winlink System*, https://amrron.com/2019/05/23/amrron-temporarily-suspends-the-use-of-winlink-system-white-paper/ (May 23, 2019).

[31] *See supra* Sections I.A and I.B.

[32] *See* ARRL, *Winlink 2000 Radio-E-mail System Overview*, http://www.arrl-mdc.net/Winlink/MDCWL2KOVwAM.htm (July 18, 2019) (emphasis added).

[33] ARRL 2013 Comments at 6.

safeguard and reinforce the principle of self-regulation, the Winlink system should be required to rely on communications modes that enable over-the-air interception of messages.

The Winlink system's reliance on the viewer is inadequate. To counteract the Winlink enforcement mechanism's lack of transparency and integrity and Winlink users' expectation of privacy, Winlink should: (1) make all international and domestic e-mail messages and files traveling through its system available for inspection in real-time by the public *before* they are transmitted over amateur frequencies,[34] and (2) rely on open-source communications modes that enable over-the-air interception.[35] These actions would allow the wider community of amateur operators to participate in the self-policing process, which would increase the number of "policemen" on the beat and thereby address transparency, integrity, and expectation of privacy concerns in a manner that is far more practical and effective than Winlink's current excuse for an enforcement mechanism. Implementing an open-source, over-the-air decoding solution would increase transparency and oversight in the amateur bands and bring the Winlink system in line with the Commission's amateur service rules.

II. THE COMMISSION SHOULD ADOPT THE PROPOSALS IN THE KOLARIK PETITION FOR RULEMAKING AND, IF IT ELIMINATES THE BAUD RATE LIMIT CONSISTENT WITH ITS PROPOSAL IN THE *2016 NPRM*, IMPLEMENT A BANDWIDTH LIMIT TO REDUCE THE RISK OF HARMFUL INTERFERENCE AND PROHIBIT PACTOR 4 AND OTHER MODES THAT CANNOT BE INTERCEPTED FOR MEANING OVER-THE-AIR.

In order to address the ongoing FCC rule violations caused by use of the Winlink system and amateur operators' inability to successfully self-police Winlink communications, the Commission should: (1) adopt the proposals set forth in the Kolarik Petition for Rulemaking; and (2) only eliminate the baud rate limit, as proposed in the *2016 NPRM*, if it *also* implements a requirement for data transparency with a bandwidth limit. These actions would provide much-needed clarity regarding the Commission's rules and ensure that amateur operators can effectively self-regulate Winlink communications, consistent with longstanding Commission policy.

[34] Unlike any other service operating in the amateur radio bands, Winlink provides the general public with access to amateur radio operators and their stations. When a member of the public sends an e-mail to Winlink users, the e-mail travels over the public Internet to a Winlink common message server ("CMS"). The e-mail remains at the Winlink CMS until a client requests a download of messages through a Winlink RMS gateway, which then transmits the messages over U.S. amateur frequencies. RMS operators generally have no idea which stations may request message pickup through their stations and would therefore need to inspect all messages from non-amateurs in the CMS queue for compliance with amateur service rules before sending them out over the Winlink system. This unique Winlink feature gives the general public direct access to the amateur radio spectrum with no oversight or transparency, contrary to the principles expressed in the *2004 NPRM and Order*, and puts amateur stations at risk of violating Section 97.219(b). *See 2004 NPRM and Order* ¶¶ 39, 41; *see also* 47 C.F.R. § 97.219(b) ("For stations participating in a message forwarding system, the control operator of the station originating a message is primarily accountable for any violation of the rules in this part contained in the message.").

[35] For example, the Winlink system could turn off ARQ and compression, rely on Forward Error Correction ("FEC") Codes, and operate more similarly to other data communications modes used in amateur radio (*e.g.*, FT-8, RTTY). *See, e.g.*, Reply Comments of Theodore S. Rappaport, WT Docket No. 16-239, at 6-7 (Apr. 29, 2019) (discussing ARQ's obsolescence and the potential for Winlink users to rely on "spectrally efficient" FEC codes).

A. To minimize the risk that peer-to-peer data transmissions cause harmful interference to narrowband amateur operations, the Commission should issue a Notice of Proposed Rulemaking based on the proposals outlined in the Kolarik Petition for Rulemaking.

Adopting the proposals contained in the Kolarik Petition for Rulemaking would eliminate imprecision in the current amateur service rules that has given Winlink a pretext for violating Section 97.113(a)(4) and other FCC rules and, as technological progress has occurred, created loopholes for transgressing bedrock amateur radio principles.[36] It would also represent a compromise that allows all ACDS systems to operate in certain specified frequency bands with open, transparent data transmissions that can be decoded for meaning while protecting narrowband operations in other bands. Therefore, the Commission should adopt a Notice of Proposed Rulemaking that would promulgate the following proposals.

Elimination of 47 C.F.R. § 97.221(c). The Commission should eliminate Section 97.221(c), which permits the operation of ACDS in bands where ACDS operations interfere with and effectively block out other amateur operations.[37] By design, ACDS systems "must use a fixed frequency or channel" and have "no effective means to determine if the channel is occupied before transmitting," which violates Section 97.101(b).[38] It is difficult to identify ACDS, which contributes to the dearth of formal complaints filed against ACDS operators.[39] Nevertheless, ACDS' ability to commandeer frequencies in service of the Winlink system "continue[s] to be a major problem [in] the amateur bands."[40]

Importantly, the elimination of Section 97.221(c) would not unduly restrict ACDS activity. Section 97.221(b) lists a number of amateur bands within which ACDS may operate.[41] Furthermore, elimination of Section 97.221(c) would align U.S. law with the International Amateur Radio Union's ("IARU's") Region 2 band plan.[42] The IARU Region 2 band plan permits wideband ACDS communications while protecting narrowband operations. Since wideband transmissions create harmful interference to narrowband transmissions, aligning the Commission's amateur bands with IARU's Region 2 band plan would: (1) create much-needed space for viable narrowband operations, and (2) prevent ACDS from interfering with narrowband operations and effectively violating Section 97.101(b)'s cooperation requirement.

Modification of 47 C.F.R. § 97.309(a)(4). Section 97.309(a)(4) states that:

> An amateur station transmitting a RTTY or data emission using a digital code specified in this paragraph may use any technique whose technical characteristics have been

---

[36] *See* Petition for Rulemaking, RM-11831 (Oct. 9, 2018) ("Kolarik Petition for Rulemaking").

[37] Kolarik Petition for Rulemaking ¶¶ 6-9.

[38] 47 C.F.R. § 97.101(b) ("Each station licensee and each control operator must cooperate in selecting transmitting channels and in making the most effective use of the amateur service frequencies. No frequency will be assigned for the exclusive use of any station.").

[39] Kolarik Petition for Rulemaking ¶ 6.

[40] *Id.*

[41] 47 C.F.R. § 97.221(b).

[42] *See* International Amateur Radio Union, *Region 2 Band Plan*, https://www.iaru-r2.org/documents/explorer/files/Plan%20de%20bandas%20%7C%20Band-plan/R2%20Band%20Plan%202016.pdf (Oct. 14, 2016).

documented publicly, such as CLOVER, G-TOR, or PacTOR, for the purpose of facilitating communications.[43]

Amateur users have failed to agree on when a technique's "technical characteristics have been documented publicly," and the development of more sophisticated communications modes not referenced in the rule has compounded this ambiguity.

To resolve this issue, the Kolarik Petition for Rulemaking proposes revising Section 97.309(a)(4) by substituting a new clause ("and the protocol used can be monitored, in its entirety, by third parties, with freely available open source software") in place of the rule's current clause ("such as CLOVER, G-TOR, or PacTOR").[44] This revision would provide a necessary standard for determining when a technique's "technical characteristics have been documented publicly" by ensuring that there would be a widely available, open-source solution for discerning the meaning of received data signals over-the-air, as is done routinely with all other data transmissions other than those adopted and developed by ARSFI and Winlink.[45] Codifying this standard would allow the rule to withstand technological change without discouraging the development of innovative, new communications modes. The revision would also delete references to obsolete communications modes that unnecessarily complicate interpretation and application of the rule. In addition, by enabling more effective self-policing of the amateur bands, the proposed rule revision would: (1) reaffirm the Commission's longstanding position that "a hallmark of enforcement in the amateur service is 'self-policing,' which depends on an amateur station hearing a message being able to determine whether message[s] violate the amateur service rules;"[46] and (2) help ensure that amateur service frequencies "[a]re not used as a substitute for other communication services"[47] or used in other ways that violate FCC rules.[48]

B. The proposed rule revisions set forth in the *2016 NPRM* should be rejected because, if adopted without a requirement for data transparency and a corresponding bandwidth limitation, they would effectively eliminate narrowband uses.

The Commission should only adopt its proposal in the *2016 NPRM* (*i.e.*, "remove limitations on . . . [the] baud rate" in a number of amateur bands)[49] if it *also* adopts a requirement for data transparency, similar in concept to what is proposed in the Kolarik Petition for Rulemaking, as well as a bandwidth emissions limit. If the proposal were adopted without revision, the Commission

---

[43] 47 C.F.R. § 97.309(a)(4).

[44] Kolarik Petition for Rulemaking ¶ 13.

[45] As an alternative, we would support allowing the operation of communications modes for which a low-cost, proprietary decoder was readily available, such as with AMBE and Fusion. *See* Letter from Theodore S. Rappaport, N9NB, to the Federal Communications Commission, WT Docket No. 16-239, PS Docket No. 17-344, RM-11708, RM-11759, RM-11828, RM-11831, at 3 (Apr. 3, 2019) (proposing that the FCC may "wish to broaden the definition of 'open source' . . . to include 'free or open over-the-air decoder solutions that are readily available at little or no cost to rank and file amateur radio operators").

[46] *2013 Order* n. 19.

[47] *2004 NPRM and Order* ¶ 39

[48] For example, the proposed rule revision would, among other things, help ensure better compliance with the one-way transmit rule, which permits "one-way communications only for specified purposes . . . [that] are related to the operation of, or to communications between, amateur stations." *Id.* ¶ 41; *see also* 47 C.F.R. § 97.111(b).

[49] *2016 NPRM* ¶ 1.

would exacerbate harmful interference in already-congested amateur bands. The 300 baud rate limit serves an important purpose – namely, "as a governor . . . on the occupied bandwidth."[50] Removal of the baud rate limit without a requirement for data transparency and a corresponding bandwidth limitation would "make[] the decision as to what bandwidth is needed for minimum interference an entirely subjective one" while also enabling ARSFI and Winlink to facilitate further FCC rule violations,[51] but with a much faster data transmission speed.[52] Without a ban on effectively encrypted communications modes and a corresponding bandwidth limitation, an amateur could "exceed[] a sensible bandwidth and interfer[e] with many operators in adjacent frequencies."[53] Accordingly, without a bandwidth limitation, the Commission would irreparably harm amateur operations, especially narrowband amateur operations. The Commission therefore should reject its proposal in the *2016 NPRM* to remove the baud rate limit for certain amateur bands without implementing a corresponding bandwidth limitation. To ensure the tenets of the hobby are preserved and to prevent greater transport speeds of effectively encrypted data transmissions that mimic other radio services (*e.g.*, e-mail), no adjustment should be made to the 300 baud rate limit until transparency and a bandwidth limit are imposed.

III. CONCLUSION

The Winlink system's reliance on a private viewer to police FCC rule compliance violates the letter and spirit of Section 97.113(a)(4) and fails to ensure that communications traveling through the Winlink system comply with the Commission's amateur service rules. In accordance with the overwhelming, widespread support in the record,[54] the Commission should adopt the proposals set forth in the Kolarik Petition for Rulemaking and reject the proposed rule changes contained in the *2016 NPRM*. Such actions would enable accurate, over-the-air interception of Winlink

[50] Comments of Dan White, W5DNT, WT Docket No. 16-239, at 1 (Aug. 8, 2016) ("Dan White Comments").

[51] *See supra* Sections I.A and I.B.

[52] Dan White Comments at 1.

[53] *Id.*

[54] *See, e.g.*, Letter from Kenneth J. Simon, Senior Vice President and General Counsel, and Monica Gambino, Vice President, Legal, Crown Castle International Corp., to Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket No. 16-239, RM-11831, RM-11708, at 1 (June 7, 2019) (encouraging "the FCC to adopt the proposals presented in [the Kolarik Petition for Rulemaking]"); Comments of Bryant P. Rascoll, WT Docket No. 16-239, RM-11831, RM-11828, RM-11759 (June 12, 2019) (expressing the need for "an open, transparent, honest and accessible hobby that allows me and other youth to pursue our interests in antennas [and] experimentation"); Comments of Admiral Edmund P. Giambastiani, Jr., WT Docket No. 16-239, RM-11831, RM-11708, RM-11759, at 2 (June 6, 2019) ("ACDS robots have been operating illegally, by using proprietary encryption, which cannot be monitored by anyone, including the FCC."); Comments of Michael Orr, RM-11831, WT Docket No. 16-239, RM-11828, RM-11759 (July 15, 2019) (noting that the Kolarik Petition for Rulemaking "seeks to ensure that appropriate uses of the amateur radio service are protected" and that "both narrow band cw and data modes and wider bandwidth voice and imagery are preserved so as to . . . not [be] displaced."); Comments of National Instruments, WT Docket No. 16-239, RM-11831, RM-11708, RM-11828, at 2 (June 10, 2019) (supporting adoption of the Kolarik Petition for Rulemaking's proposals as "an important step for improving the opportunity for future youth in ham radio that could help the US build strength in STEM" and opposing adoption of the *2016 NPRM*'s proposed rules); Comments of American Certification Body, Inc., WT Docket No. 16-239, RM-11831, at 1 (June 6, 2019) (citing "peer pressure and self-enforcement" as principles preventing traffic from "regularly bypass[ing] other commercial means"); Comments of Kyle Watt, RM-11831 (June 26, 2019) (requesting the FCC to not adopt the *2016 NPRM* and to adopt the proposals in the Kolarik Petition for Rulemaking).

communications and ensure that the wider amateur community can self-police the amateur bands, consistent with longstanding Commission policy.

Respectfully Submitted,

/s/ Ari Q. Fitzgerald

Ari Q. Fitzgerald
John W. Castle
HOGAN LOVELLS US LLP
555 Thirteenth Street, NW
Washington, DC 20004
T: (202) 637-5423
E: ari.fitzgerald@hoganlovells.com

Theodore S. Rappaport, N9NB
Director, NYU WIRELESS
David Lee/Ernst Weber Professor of Electrical Engineering
New York University
2 MetroTech Center, 9th Floor
Brooklyn, NY 11201
T: (646) 997-3403
E: tsr@nyu.edu

Michael J. Marcus, N3JMM
Sc.D. Fellow IEEE
Marcus Spectrum Solutions, LLC,
8026 Cypress Grove Lane
Cabin John, MD 20819
E: mjmarcus@marcus-spectrum.com

cc: Donald Stockdale
Roger Noel
Scot Stone